AMENDMENTS TO THE CLAIMS

This Listing of Claims will replace all prior versions and listings of claims in this application.

Listing of Claims:

1. (Currently Amended) A power management system for supplying power to an output circuit comprising:

a plurality of rechargeable batteries;

first conversion means for converting a supply voltage to a battery voltage to enable charging of one or more of the plurality of rechargeable batteries; and

switch means to enable a selected battery of the plurality of rechargeable batteries to be connected to the output circuit to enable the selected battery to be discharged through the output circuit,

wherein the output circuit forms part of an implantable device.

2. (Previously Presented) The system according to claim 1 wherein the switch means is connected to the first conversion means to enable charging to the selected battery.

3. (Currently Amended) The system according to claim 1 further ~~comprising~~ comprising a second conversion means connected between the output circuit and the switch means for converting the voltage of the selected battery to a voltage for use by the output circuit thereby discharging the selected battery.

4. (Previously Presented) The system according to claim 1 wherein a rechargeable battery of the plurality of rechargeable batteries is chosen, one at a time, in order to be charged or discharged.

5. (Previously Presented) The system according to claim 1 wherein the first conversion means acts as the second conversion means.

6. (Previously Presented) The system according to claim 1 wherein the switch means comprises a plurality of switches enabling connection of a respective rechargeable battery of the plurality of rechargeable batteries to the first conversion means and to the output circuit.

7. (Previously Presented) The system according to claim 1 further comprising a control unit for controlling the switch means to either enable charging or discharging of a rechargeable battery of the plurality of rechargeable batteries.

8. (Currently Amended) The system according to claim 7 further ~~comprising~~ comprising a multiplexer means having an input connected to one terminal of each rechargeable battery in the plurality of rechargeable batteries to enable the voltage signals pertaining to each battery to be selected and forwarded to an analogue to digital converter.

9. (Previously Presented) The system according to claim 8 further comprising a shunt impedance means connected to the other terminal of each battery in the plurality of rechargeable batteries to measure the charge current of each battery, represented as a voltage drop across the shunt impedance means.

10. (Previously Presented) The system according to claim 9 wherein the shunt impedance means is connected in parallel to a shunt switch to short circuit the shunt impedance means when the shunt impedance is not in use.

11. (Currently Amended) The system according to claim 10 further ~~comprising~~ comprising an amplification means connected between the shunt impedance means and the multiplexer means to amplify the voltage drop across the shunt impedance means to the input voltage range of the analogue to digital converter.

12-13. (Cancelled)

14. (Currently Amended) The system according to ~~claim 13~~claim 10 further comprising a register for storing information pertaining to each battery.

15. (Previously Presented) The system according to claim 14 wherein said information comprises any one or more of charge status of each battery in the plurality of rechargeable batteries, error status of each battery in the plurality of rechargeable batteries or a flag identifying whether a battery in the plurality of rechargeable batteries has been disabled from being charged or discharged.

16-18. (Cancelled)

19. (Previously Presented) The system according to claim 1 wherein the second conversion means enables discharging of a battery of the plurality of rechargeable batteries such that charge in the selected battery of the plurality of rechargeable batteries is forwarded to the output circuit.

20. (Cancelled)

21. (Currently Amended) The system according to ~~claim 20~~ claim 1, wherein the implantable device is an implantable hearing prosthesis.

22. (Previously Presented) The system according to claim 1 wherein the first conversion means includes an inductive means, one or more switches and a switch control unit to enable charging and/or discharging of a selected battery of the plurality of rechargeable batteries.

23. (Previously Presented) The system according to claim 1 wherein the second conversion means includes an inductive means, one or more switches and a switch control unit to enable discharging of a selected battery of the plurality of rechargeable batteries.

24. (Cancelled)

25. (Currently Amended) A method of managing the supply of power to an output circuit in a system that includes a plurality of rechargeable batteries, the method comprising the steps of:

converting a supply voltage to a battery voltage to enable charging of one or more of the plurality of the rechargeable batteries; and

connecting a battery in the plurality of rechargeable batteries, using switch means, to the output circuit to enable the connected battery to be discharged through the output circuit

wherein the output circuit forms part of an implantable device.

26. (Previously Presented) The method according to claim 25 wherein the connected battery in the plurality of rechargeable batteries is discharged to the output circuit by converting the voltage output from the connected battery in the plurality of rechargeable batteries to a voltage for use by the output circuit.

27. (Previously Presented) The method according to claim 25 further comprising the step of providing the switch means in the form of a bank of switches, one for each rechargeable battery of the plurality of rechargeable batteries.

28. (Previously Presented) The method according to claim 27 further comprising the step of controlling the switch means to enable the charging or discharging of a selected battery of the plurality of rechargeable batteries on the basis of information stored in a register on each of the rechargeable batteries in the plurality of rechargeable batteries.

29. (Previously Presented) The method according to claim 28 further comprising the steps of multiplexing and measuring parameters, such as battery voltage, battery charge and battery current, pertaining to each rechargeable battery in the plurality of rechargeable batteries for storage as digital values in the register.

30. (Previously Presented) The method according to claim 29 further comprising the step of maintaining a record in the register on the state of charge of each rechargeable battery in the plurality of rechargeable batteries.

31. (Previously Presented) The method according to claim 30 further comprising the step of providing an optimum range, as a percentage value of the state of charge, within which each rechargeable battery in the plurality of rechargeable batteries is charged and/or discharged.

32. (Previously Presented) The method according to claim 31 further comprising the step of disabling charging of a battery of the plurality of rechargeable batteries where the charge of that battery of the plurality of rechargeable batteries is above a first percentage limit of the state of charge.

33. (Previously Presented) The method according to claim 31 further comprising the step of terminating the discharging of a battery of the plurality of rechargeable batteries where the charge of that battery of the plurality of rechargeable batteries is below a second percentage limit of the state of charge.

34. (New) A power management system for supplying power to an output circuit comprising:

a plurality of rechargeable batteries;

an input voltage converter circuit configured to convert a supply voltage to a battery voltage to enable charging of one or more of the plurality of rechargeable batteries; and

a switch matrix configured to enable a selected battery of the plurality of rechargeable batteries to be connected to the output circuit to enable the selected battery to be discharged through the output circuit,

wherein the output circuit forms part of an implantable device.

35. (New) The system of claim 34, wherein the switch matrix is connected to the input voltage converter circuit to enable charging to the selected battery.

36. (New) The system of claim 34, further comprising:

an output voltage converter circuit connecting the output circuit and the switch matrix and configured to convert the voltage of the selected battery to a voltage for use by the output circuit, thereby discharging the selected battery.

37. (New) The system of claim 34, wherein a rechargeable battery of the plurality of rechargeable batteries is chosen, one at a time, in order to be charged or discharged.

38. (New) The system of claim 34, wherein the input voltage converter circuit functions as the output voltage converter circuit.

39. (New) The system of claim 34, wherein the switch matrix comprises a plurality of switches enabling connection of a respective rechargeable battery to the input voltage converter circuit and to the output circuit.

40. (New) The system of claim 34, further comprising:

a control unit configured to control the switch matrix to either enable charging or discharging of a rechargeable battery of the plurality of rechargeable batteries.

41. (New) The system of claim 40, further comprising:

a multiplexer having an input connected to one terminal of each rechargeable battery in the plurality of rechargeable batteries to enable the voltage signals pertaining to each battery to be selected and forwarded to an analogue to digital converter.

42. (New) The system of claim 41, further comprising:

a shunt resistor connected to the other terminal of each battery in the plurality of rechargeable batteries to measure the charge current of each battery, represented as a voltage drop across the resistor.

43. (New) The system of claim 42, wherein the shunt resistor is connected in parallel to a shunt switch to short circuit the resistor when the resistor is not in use.

44. (New) The system of claim 43, further comprising an amplifier connected between the shunt resistor and the multiplexer to amplify the voltage drop across the resistor to the input voltage range of the analogue to digital converter.

45. (New) The system of claim 44, wherein the analogue to digital converter measures individual battery voltage of any one of the rechargeable batteries in the plurality of rechargeable batteries and converts the measured voltage to a digital value.

46. (New) The system of claim 44, wherein the analogue to digital converter measures the voltage drop across the shunt resistor and converts the measured voltage into a digital value.

47. (New) The system of claim 46, further comprising:
a register for storing information pertaining to each battery.

48. (New) The system of claim 47, wherein said information comprises any one or more of charge status of each battery in the plurality of rechargeable batteries, error status of each battery in the plurality of rechargeable batteries or a flag identifying whether a battery in the plurality of rechargeable batteries has been disabled from being charged or discharged.

49. (New) The system of claim 48, wherein the control unit is in communication with the register and with the analogue to digital converter for processing signals and data from the analogue to digital converter and from the register.

50. (New) The system of claim 49, wherein the control unit periodically senses the presence of a voltage at the input to the switch matrix.

51. (New) The system of claim 50, wherein the control unit selects a battery of the plurality of rechargeable batteries to be charged or discharged on the basis of information stored in the register pertaining to a particular battery of the plurality of rechargeable batteries.

52. (New) The system of claim 34, wherein the implantable device is an implantable hearing prosthesis.

53. (New) The system of claim 34, wherein the input voltage converter circuit includes an inductor, one or more switches and a switch control unit to enable charging and/or discharging of a selected battery of the plurality of rechargeable batteries.

54. (New) The system of claim 34, wherein the output voltage converter circuit includes an inductor, one or more switches and a switch control unit to enable discharging of a selected battery of the plurality of rechargeable batteries.